



# Environmental Remediation Program - A Citizen's Guide to Vapor Intrusion Investigation

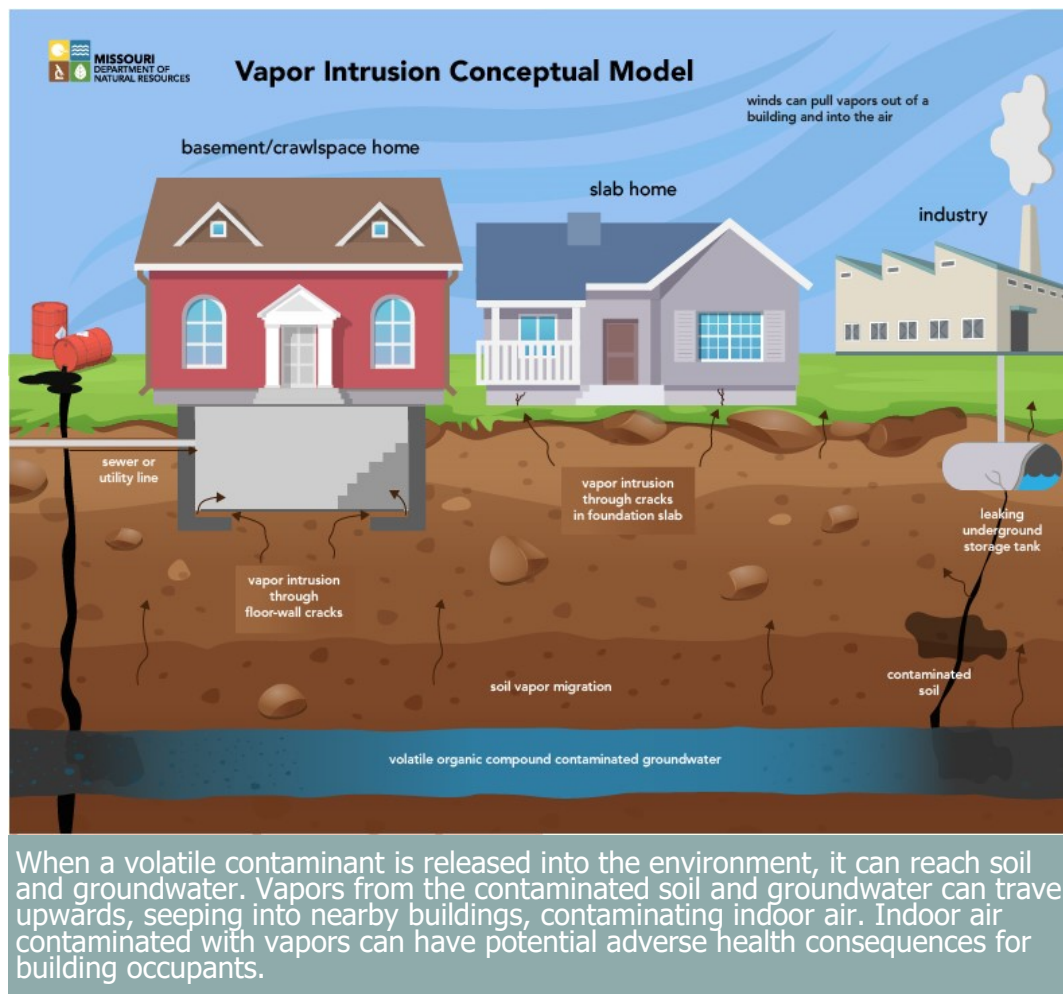
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## What is a contaminant?

A contaminant is a hazardous substance that has been released to the environment and has ended up where it's not supposed to be, such as in soil or groundwater. For example, a chemical leaking from a 55-gallon drum into the environment becomes a contaminant. Volatile contaminants, such as gasoline, evaporate easily and form vapors in the air. When released to soil and groundwater, they can become a source of vapor intrusion.

## What is vapor intrusion?

The term "vapor intrusion" describes how volatile contaminants, such as volatile organic compounds (VOCs), in soil and groundwater form vapors that can move into buildings through cracks in building foundations, crawl spaces or sewer and utility lines. These vapors can contaminate indoor air and put building occupants at potential health risk from inhaling these vapors.



## Why is vapor intrusion a concern?

Vapor intrusion is a concern because contaminant vapors can affect indoor air quality and cause short-term health effects, such as eye and respiratory irritation, headache, or nausea. Low-level exposure to vapors from certain volatile contaminants over many years can increase a person's risk of developing potentially serious health problems, including cancer.

# What happens if vapor intrusion is found in my home?

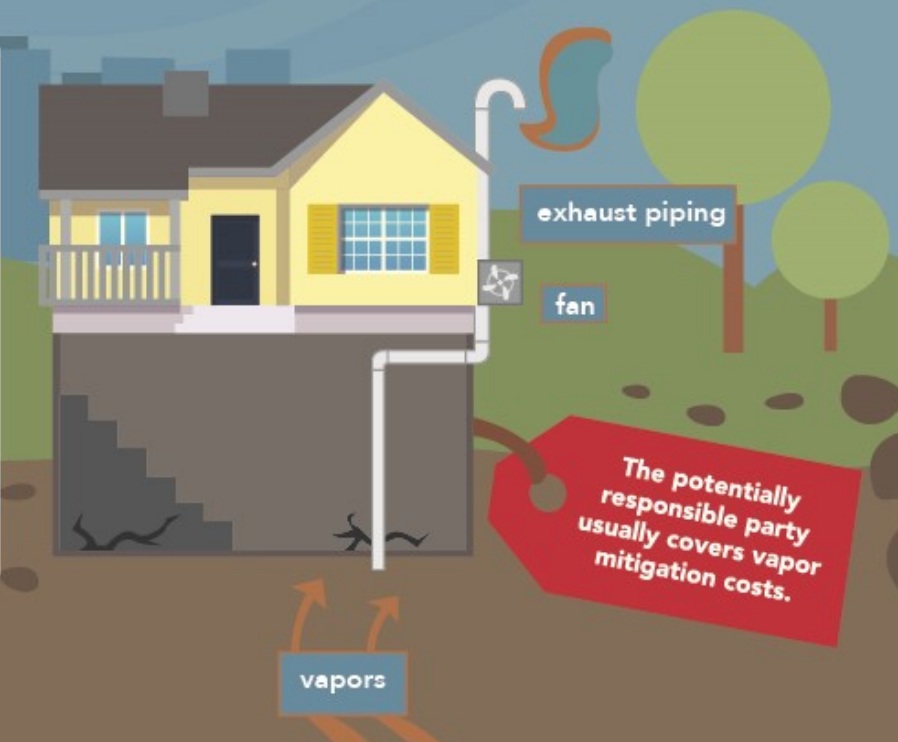
## Options - Vapor Elimination Technologies

Repair and maintain building plumbing, such as adding water to a dry P-trap.

Seal openings in the foundation, such as cracks in floors and walls, and around pipes and utility lines.

Install a check valve within the sewer line to prevent upward flow of liquids and gasses.

Install a sub-slab depressurization system to vent vapors outdoors.



## How can I find out if I have volatile contaminant vapors in my home?

If you live near a site with volatile contamination, the potential for vapor intrusion into your home or buildings on your property may need to be investigated. Samples of soil, groundwater and soil gas may be collected near your home, building, or business to determine if vapor intrusion may be a concern. If the sample analysis results indicate that vapor intrusion could be a problem, sampling on your property and inside your home may be necessary. If needed, this sampling would be coordinated with you, including obtaining your prior written consent, before any sampling is done on your property – at no cost to you. If vapor intrusion is not found, this would hopefully provide you with peace of mind where potential adverse health conditions are concerned.

## If contaminant vapors are found in my home, what happens next?

If testing confirms vapor intrusion is affecting the air in your home at a level of potential health concern, a variety of measures can be taken to address the problem. These measures can include sealing cracks in the building's foundation or adjusting the building's heating, ventilation, and air-conditioning system to prevent infiltration of subsurface vapors. It can be as simple as installing an indoor air purification system or more involved, such as installing a subsurface building foundation depressurization system to prevent vapors from entering the building. This type of system continuously vents the vapors from beneath the building to the outside.

Subsurface depressurization systems use minimal electricity and should not noticeably affect heating and cooling efficiency. The party responsible for cleaning up the contamination is usually responsible for paying for installation of systems to control vapor intrusion. Further, these systems typically remain in place until the contamination is cleaned up to levels that are protective of human health, though some systems may remain in place permanently.

## Some facts:

- Vapor intrusion is affected by different factors, such as the type of soil under your building, the nature and concentration of contaminants in soil and groundwater, the type and condition of your building, and weather conditions in your area. The amount and concentration of contaminants in vapors entering a building can be different over time – changing seasonally, weekly, daily and even hourly.
- Passive and active vapor systems lessen the effects of vapor intrusion and may be required until contaminated soil or groundwater is cleaned up, which can take an extended period of time.
- Passive controls include:
  - Vapor barriers installed during new building construction and passive sub-foundation venting systems installed in existing buildings.
- Active vapor control systems include:
  - Sub-slab depressurization systems that rely on fans to draw vapors from the subsurface so they do not enter buildings.
- Sealing building foundation and basement wall cracks, and other openings, such as utility runs, can reduce vapor intrusion and contribute to the success of active and passive controls. To learn more about vapor control systems, visit EPA's Citizen's Guide to Vapor Intrusion Mitigation at [semspub.epa.gov/work/HQ/158721.pdf](https://semspub.epa.gov/work/HQ/158721.pdf).
- Vapor intrusion control systems are quite safe and are designed to improve indoor air quality by either preventing contaminant vapors from entering buildings or removing vapors that have already traveled inside. These control systems can also help address unrelated potential health issues such as radon gas accumulation in buildings, and help with moisture control to prevent mold growth. Please be aware that except for indoor air purification units, these control systems will not reduce vapors from indoor sources of volatile chemicals in common household items such as cleaning supplies, textiles, carpet, furniture, paints, and automotive or hobby supplies.